

## REMARKS

Claims 21 to 23, 25 to 26, 28 to 31 and 34 to 42 are pending in the present application. Applicants respectfully submit that the pending claims are patentable for the following reasons.

**I. Rejection of Claims 21 to 23, 25, 26, 29, 30, 37 and 40**

Claims 21 to 23, 25, 26, 29, 30, 37 and 40 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over United States Patent No. 6,051,503 ("Bhardwaj et al.") in view of United States Patent No. 6,277,173 ("Sadakata et al."), United States Patent No. 5,310,426 ("Mori") and Applicants' allegedly admitted prior art (AAPA). It is respectfully submitted that the combination of Bhardwaj et al., Sadakata et al., Mori and the AAPA does not render these claims unpatentable for the following reasons.

Regarding claim 21, **neither Bhardwaj et al., nor Sadakata et al., nor Mori discloses or suggests that a buffer tank is located along a passivation gas line upstream from an etching chamber, and that all of the passivation gas supplied to the etching chamber passes through the passivation gas line and the buffer tank.** On page 5, lines 11 to 12, the Office Action admits that Bhardwaj et al. is silent about the use of a buffer tank located along a passivation gas line. In addition, on page 5, lines 20 to 22, the Office Action further admits that Sadakata et al. does not explicitly demonstrate that the process gas to the etching chamber passes through the passivation gas line and the buffer tank. Mori, in turn, describes an apparatus for forming a thin film on a substrate, using microwave plasma chemical vapor deposition. In addition, as is apparent from Figures 3 and 4 and column 6, line 39 to column 7, line 47, the apparatus of Mori includes a reaction chamber (1) that is connected to a buffer tank (37) via an exhaust pipe (10) and a needle valve (36) or a vacuum tank (35). A mixture of reactant gas, such as silane (SiH<sub>4</sub>), and carrier gases, such as helium (He) and argon (Ar), is directed via supply pipe (9) to reaction chamber (1), where the gas mixture is acted upon by microwave radiation from microwave generator (B) and a thin film of silicon is deposited on a substrate (23). However, **contrary to the contentions appearing on page 5, line 22 to page 6, line 2 of the Office Action, the silane reactant gas does not pass through the buffer tank**

(37) to the reaction chamber (1), but is directed to the reaction chamber (1), reacted there to form the silicon thin film, and then exhausted to the buffer tank (37) via exhaust pipe (10). In the process, a portion of the silane gas is consumed in the formation of the silicon thin film, and a portion of the silane gas reacts with air leaked into the apparatus and O<sub>2</sub> and H<sub>2</sub>O impurities to form silicon oxide powder. Therefore, it cannot be said that all of the silane reactant gas supplied to the reaction chamber (1) passes through the buffer tank (37). Furthermore, the AAPA does not cure the deficiencies of Bhardwaj et al. and Sadakata et al. with respect to at least the above-mentioned features.

Moreover, the motivation for combining the disclosures of Bhardwaj et al. and Sadakata et al., provided on page 5, lines 15 to 19 of the Office Action - namely, to regulate the concentration of gas into a process chamber during etching - is untenable for the following reasons. First of all, in the reactor of Bhardwaj et al., there is no indication that any source of process gases is providing these gases at a concentration that is unknown or fluctuating. Therefore, one skilled in the art would not need to employ a buffer tank to regulate the concentration of process gases. Secondly, claim 21 provides that a buffer tank is located along a passivation gas line upstream from an etching chamber, and that all of the passivation gas supplied to the etching chamber passes through the passivation gas line and the buffer tank. If all of the passivation gas supplied to the etching chamber passes through a buffer tank and a passivation gas line along which the buffer tank is situated, then it is impossible for the buffer tank to regulate the concentration of gas into the etching chamber, for the buffer tank is only supplied by one gas line, namely, the passivation gas line, and all of the gas exiting the buffer tank is supplied to the etching chamber. Thirdly, in the KSR decision, the Supreme Court identified a number of rationales that might support a conclusion of obviousness. Among the rationales identified by the Supreme Court are: (a) combining prior art elements according to known methods to yield predictable results; (b) simple substitution of one known element for another to obtain predictable results; (c) use of known technique to improve similar devices (methods, or products) in the same way; (d) applying a known technique to a known device (method, or product) ready for improvement to yield predictable

results; (e) "Obvious to try" -- choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success; (f) known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art; and (g) some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention. The Final Office Action has not sufficiently identified what rationale is relied upon in connection with the present rejection and has failed to articulate the necessary findings to support any such rationale.

Accordingly, it is respectfully submitted that the combination of Bhardwaj et al., Sadakata et al., Mori and the AAPA does not render claim 21 unpatentable for at least the above reasons.

Claim 30 includes features analogous to claim 21. Accordingly, it is respectfully submitted that the combination of Bhardwaj et al., Sadakata et al., Mori and the AAPA does not render claim 30 unpatentable for at least the reasons set forth above in support of the patentability of claim 21.

As for claims 22, 23, 25, 26 and 29 and claims 37 and 40, which respectively depend from, and therefore include all of the features of, claims 21 and 30, it is respectfully submitted that the combination of Bhardwaj et al., Sadakata et al., Mori and the AAPA does not render these dependent claims unpatentable for at least the reasons set forth above.

In view of all of the foregoing, withdrawal of this rejection is respectfully requested.

## **II. Rejection of Claim 28**

Claim 28 was rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Bhardwaj et al. in view of Sadakata et al., Mori, the AAPA and U.S. Patent Application Publication No. 2003/0059720 ("Hwang et al."). It is respectfully submitted that the combination of Bhardwaj et al., Sadakata et al., Mori, the AAPA and Hwang et al. does not render this claim unpatentable for the following reasons.

Claim 28 ultimately depends from claim 21 and therefore includes all of the features recited in claim 21. In addition, Hwang et al. does not disclose or suggest all of the features of claim 21 not disclosed or suggested by Bhardwaj et al., Sadakata et al., Mori and the AAPA. Therefore, it is respectfully submitted that the combination of Bhardwaj et al., Sadakata et al., Mori, the AAPA and Hwang et al. does not render this dependent claim unpatentable for at least these reasons and the reasons more fully set forth above in support of the patentability of claim 21.

In view of all of the above, withdrawal of this rejection is respectfully requested.

**III. Rejection of Claims 34 to 36, 41 and 42**

Claims 34 to 36, 41 and 42 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Bhardwaj et al. in view of Sadakata et al., Mori, the AAPA and United States Patent No. 6,846,745 ("Papasouliotis et al."). It is respectfully submitted that the combination of Bhardwaj et al., Sadakata et al., Mori, the AAPA and Papasouliotis et al. does not render these claims unpatentable for the following reasons.

Claims 34 to 36 and 42 and claim 41 respectively depend from, and therefore include all of the features recited in, claims 30 and 21. In addition, Papasouliotis et al. does not disclose or suggest all of the features of claims 30 and 21 not disclosed or suggested by Bhardwaj et al., Sadakata et al., Mori and the AAPA. Therefore, it is respectfully submitted that the combination of Bhardwaj et al., Sadakata et al., Mori, the AAPA and Papasouliotis et al. does not render these dependent claims unpatentable for at least these reasons and the reasons more fully set forth above in support of the patentability of claims 30 and 21.

In view of all of the above, withdrawal of this rejection is respectfully requested.

**IV. Rejection of Claims 38 and 39**

Claims 38 and 39 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Bhardwaj et al. in view of Sadakata et al., Mori, the AAPA and United States Patent No. 5,683,548 ("Hartig et al."). It is

respectfully submitted that the combination of Bhardwaj et al., Sadakata et al., Mori, the AAPA and Hartig et al. does not render these claims unpatentable for the following reasons.

Claims 38 and 39 ultimately depend from claim 30 and therefore include all of the features recited in claim 30. In addition, Hartig et al. does not disclose or suggest all of the features of claim 30 not disclosed or suggested by Bhardwaj et al., Sadakata et al., Mori and the AAPA. Therefore, it is respectfully submitted that the combination of Bhardwaj et al., Sadakata et al., Mori, the AAPA and Hartig et al. does not render these dependent claims unpatentable for at least these reasons and the reasons more fully set forth above in support of the patentability of claim 30.

In view of all of the above, withdrawal of this rejection is respectfully requested.

**V. Conclusion**

In view of the foregoing, it is respectfully submitted that all pending claims of the present application are now in condition for allowance. Prompt reconsideration and allowance of the present application are therefore earnestly solicited.

Respectfully submitted,

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